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TABLE OF CONTENTS.

PAGE.

EDITORIAL ARTICLES:—Natural Beauty and the Landscape Gardener.—List of the Writings of the late Professor Gray.—Rochester's New Park Commission.—An Experimental Fruit Garden at Louveciennes, France 481
Newport—II. ..... *Mrs. Schuyler Van Rensselaer.* 482
Chinese Horticulture in New York ..... *Miss E. T. Lander.* 483
NEW OR LITTLE KNOWN PLANTS:—Acidanthera bicolor (with illustrations), *W. E. Endicott.* 484
FOREIGN CORRESPONDENCE:—London Letter ..... *W. Watson.* 484
CULTURAL DEPARTMENT:—Summer Apples in New England, *T. H. Hoskins, M.D.* 485
Green-house Climbers for Cut Flowers ..... *W.* 487
Soils ..... *C. L. Allen.* 488
Top-dressing for Trees—Pruning Trees—Pruning Shrubs—Out-door Roses 488
THE FOREST:—Do Forests Influence Rainfall? ..... *B. E. Fernow.* 489
CORRESPONDENCE 490
RECENT PUBLICATIONS 491
RECENT PLANT PORTRAITS 491
MEETINGS OF SOCIETIES:—Pennsylvania Forestry Association 491
NOTES 492
ILLUSTRATIONS:—Acidanthera bicolor, Fig. 75 486
Acidanthera bicolor, grown in a tub, Fig. 76 487

Natural Beauty and the Landscape Gardener.

IN the *Century Magazine* for October was an interesting article called "An English Deer Park," by Mr. Richard Jeffries, a well-known writer on the beauties of nature, who died, we believe, before his words were in print. Chief among the attractions of the fine park to which he refers—without giving us its name or indicating its locality—is its naturalness of aspect. "Happily," he says, "the place escaped notice in that artificial era when half the parks and woods were spoiled to make the engraver's ideal landscape of straight vistas, broad in the foreground and narrowing up to nothing. Wide, straight roads—you can call them nothing else—were cut through the finest woods, so that upon looking from a certain window or standing at a certain spot in the grounds you might see a church-tower at the end of the cutting. . . . Many common highway roads are really delightful, winding through trees and hedge-rows, with glimpses of hills and distant villages. But these planned, straight vistas . . . at once destroy the pleasant illusion of primeval forest. . . . Happily, this park escaped, and it is beautiful. Our English landscape wants no gardening; it *cannot* be gardened. The least interference kills it. The beauty of English woodland and country is in its detail. There is nothing empty and unclothed. . . . Nature is a miniature painter, and handles a delicate brush, the tip of which touches the tiniest spot and leaves something living. The park has indeed its larger lines, its broad, open sweep and gradual slope, to which the eye accustomed to small inclosures requires time to adjust itself. These left to themselves are beautiful; they are the surface of the earth, which is always true to itself, and needs no banks nor artificial hollows. The earth is right and the tree is right; trim either and all is wrong."

These words have doubtless been read by many of our readers; and as they are prettily written and savor of that "love of nature" which most people are apt to think means the same thing as a love of the beautiful in nature, they have perhaps deceived many into agreement with the ideas they voice. We are glad, therefore, to be able to quote from another English writer (in the pages of *The Garden*) an excellent statement of what we conceive to be a better point of view in such matters. Criticising the paragraph we have cited, this writer says:

"Our best natural landscapes certainly want but little gardening, but it *is* possible to garden them. The least *interference* with Nature always kills it, as Jeffries wrote; but, then, a little assistance—a little enrichment—is sometimes better than the 'masterly inactivity' which he seems to recommend as everything. Man likes to adjust himself to Nature, and often must do so, while the true gardener can help Nature wield her paint-brush, and he will also touch the tiny spots and leave 'something living' and beautiful wherever he goes. The great landscape gardener merely helps Nature to do her work quickly and easily, and that he can do so is past all doubt. Throwing up unnecessary terraces and scooping out unnecessary ditches over which unnecessary bridges are thrown is not gardening. If Nature puts a brook or a river, then the bridge is a real human want, and may be supplied with good effect; rarely or never can it be done otherwise. It is not in doing things that the landscape gardener's art is most fully illustrated. Some of his greatest triumphs have been achieved in knowing exactly what to leave alone."

But even these words would not leave upon a reader's mind exactly the impression which we conceive to be the right one. The right impression with regard to landscape-gardening we conceive to be this. There are very many beautiful spots on earth, but very few of them are beautiful in a way that fits them, untouched by art, for association with the homes of men. A primeval forest would be a priceless possession on some distant part of an estate; but to permit it to come up close to a splendid dwelling would be an offense against appropriateness and harmony, and therefore against beauty. A forest is not a park, and to make a park art is needed. Whether it is made by a process of addition or by a process of subtraction matters nothing. It needs as much art to disengage a beautiful landscape from encumbering details as to create one from the beginning. If certain English landscapes are so beautiful, and at the same time so appropriate for dwelling-places, that it seems sacrilege to touch them, it is because man has been at work over the whole surface of England for many centuries. Primeval effects nowhere exist where the country wears its typically English look. In our own land we seldom find English landscape effects near where we wish to build our homes. The reason is obvious, and so likewise is the necessity why we should be more careful than the English to call in the aid of art.

Moreover, while in the majority of cases those natural effects which Mr. Jeffries loved are the best ones to desire, there are certain cases when the straight roads he condemns are very beautiful, and when formal features of other kinds may well accompany them. Everything depends on appropriateness and harmony. What is good in one case is bad in another; and no computation of the average number of cases when a thing is good or is bad can help to determine its excellence when a given problem is in view. And finally, it will be confessed that in certain places where men must live Nature is not beautiful. Then the artist may well interfere with her intentions and create a loveliness of his own. Then he may make brooks and rivers if he can induce her to help him, and alter the surface of the ground, and decide what trees shall grow upon it and where. In short, it is only a question of degree. Everywhere and always the artist is needed. He has first to decide whether much or little should be done, and then to decide in what manner it should be done. If he does not understand the art of gardening he will create ugliness, not beauty; but this is not to say that the art itself should be condemned.

THE list of the writings of the late Professor Asa Gray, chronologically arranged by his associates, Professor Goodale and Mr. Sereno Watson, have been reprinted, in pamphlet form, from the *American Journal of Science*, in which they formed the appendix to the thirty-sixth volume. The long list, which occupies forty-one pages of the *Journal*, is conveniently divided into three series—the first being devoted to "Scientific Works and Articles;" the second to "Botanical Notices and Book Reviews," and the third to "Biographical Sketches, Obituaries, Necrological Notices," etc. Asa Gray was born in 1810, and his first contribution to science was published in 1834, and, curiously enough, was devoted to mineralogy, a subject in which he was early interested, but soon abandoned entirely. His publications, thus early begun, were continued almost up to the hour when he was struck down with the illness which ended that long and brilliant career, which is the pride and glory of every educated American.

In a period of fifty-three years, in 1839 only is there no entry of a publication from his pen. The book notices and reviews were begun in 1841 in the *American Journal of Science*, with an account of a "Report on the Tea Plant in Upper Assam," and were continued, uninterruptedly, with the exception of the year 1851, until the winter of 1887. Taken as a whole, they furnish the best account of the history and development of the science of botany and of botanical literature during this period which has ever been written, just as the biographical sketches and necrological notices, begun in 1842 in the *American Journal of Science*, give the best account of the principal figures which passed from the botanical stage during a period of great botanical activity, in which Charles Darwin was changing the whole current of scientific thought.

The number of Professor Gray's publications, as displayed in this list, and the immense and varied field which they cover, must appear stupendous, even to those persons who were best fitted by opportunity to judge of his vast knowledge, his wonderful mental activity and surprising industry; and the astonishment will be all the greater when it is remembered that his work was of the very highest class, and that it was coupled with constant and engrossing professorial and administrative duties.

The value of the chronological list is greatly increased by the addition of a very complete index, occupying no less than twenty-five pages, of two columns each, prepared by Mr. A. B. Seymour. The list, thus supplemented, will be found invaluable by all working botanists, especially those interested in American plants, but, unfortunately, the papers to which it serves as a guide are widely scattered in publications which are practically inaccessible to the ordinary student. The time, however, is not, it is to be hoped, very far distant, when Professor Gray's scattered papers, and especially the bibliographical ones, if they cannot all be republished, will be gathered together and reproduced for the benefit of botanists.

No more useful, appropriate or enduring monument, with the single exception of a permanent endowment for the support and increase of his vast herbarium—the great controlling interest of his life—can be erected to the memory of Asa Gray.

A Park Commission of twenty-one members has been formed at Rochester, New York. Among them we note the names of the Roman Catholic Bishop of the Diocese, Doctor McQuaid, Mr. William Barry, of the Mount Hope nurseries, and Mr. William Kimball, who has one of the finest collections of Orchids in the world. The number of commissioners is excessive, but the board has already taken two steps from which we should infer that its work would be unusually well done. First, it has elected as its President an eminent physician and sanitarian, Dr. Edward M. Moore, the President of the State Board of Health of New York; second, before acquiring any land it has separately taken the professional advice of eight men of experience in the management of public parks—Mr. H. W. S. Cleveland, of Minneapolis; Mr. Calvert Vaux and Mr. Samuel Parsons, Jr., of New York; Mr. F. L. Olmsted and Mr. J. C. Olmsted, of Brookline; Mr. William McMillan, of Buffalo, and Mr. W. S. Edgerton, of Albany. It has occasioned some surprise that each of these gentlemen, after making the circuit of the city, should, without conference, have fixed upon the same three localities as most desirable to be secured for park purposes. One of these is a body of high ground commanding a superb distant prospect, a part of the site being a tract of land of fifty acres which Messrs. Ellwanger & Barry, the well-known nurserymen, have presented to the city; another, a piece of the celebrated Genesee meadows above the city; the third, a portion of the great wooded gorge of the Genesee below the city.

A French pomologist, Monsieur H. Beer, has established at Louveciennes, not far from Paris, an experimental fruit-garden, in which 4,000 Apple and Pear trees have already been planted, among which are many American varieties scarcely known yet by name even in France, but which are now to be tried upon a sufficient scale to test satisfactorily their merits. With these Monsieur Beer has imported from this country plants of some of the earliest and best known varieties of French origin with the view of determining whether these varieties have undergone any change in the character of their fruit during the period they have been subjected to the American climate and to the American methods of cultivation. The result of this experiment will be watched with much interest by pomologists here and abroad.

Newport.—II.

THERE is as much variety among the fences at Newport as among the houses, and the fact is very conspicuous, as properties are so small that one form of barrier is perpetually giving place to another. It can hardly be said that a fence which seems exactly right often appears; sometimes it is too pretentious, more often, perhaps, not dignified enough. In at least one case we find a massive stone wall, some eight feet in height, which would be admirable for the protection of a large park, but seems out of place encircling a few acres in a thickly built settlement, and sins against that neighborly freedom of prospect which is beauty's sole salvation in such a settlement, and is generally preserved at Newport. And in many cases we see, on the other hand, a cheap wooden paling, without dignity or beauty, surrounding expensively kept grounds and a house of the most costly kind. But here and there we find admirable devices. For one of the best we must look again to Mr. Goelet's place, which has a very low, but broad, stone wall, built of rather thin slabs of slate in a way which hits just the right medium between over-precision and carelessness. A rustic fence recently put up on Bellevue Avenue is very well designed and pretty, but perhaps a little too rural in effect for just this situation. Low brick walls are sometimes used, but I saw hardly any which had the beauty possible to this material. Hedges, and especially those of Privet, grow luxuriantly at Newport, and are often employed. Without exception they are well tended, but sometimes they have been allowed to grow so thin that the eye can penetrate them everywhere. No matter how neat a hedge may be, it is certainly a failure when this is the case.

With entrance-gates the case is the same; sometimes they are too mean in effect, sometimes self-assertive and showy beyond all reason. Perhaps the most satisfactory is the fine, tall gate, with wide, lateral wings, of wrought iron, which admits to Mr. Van Alen's new house. It is of Spanish workmanship, and, from the design, seems to date from the middle of the last century; but fashions so often persisted in iron-work after they had died out in architecture, that it is hard to feel sure of its exact time. The pattern is at once strong and very light, and the gate is just what it should be to stand at Newport—very elegant, yet comparatively simple, and not at all suggestive of mere display or of excessive powers of protection. It is to be hoped that it may inspire others to employ this beautiful material. Iron-work as good as this in design, and better in execution, can easily be obtained to-day in America. Better in execution, I say, for last-century iron-work is a combination of welded and riveted pieces, while our best, like that of still earlier centuries abroad, is welded

throughout, and therefore more durable. Nothing better for a Newport wall could be imagined than a low plinth of brick or stone, surmounted by a light iron trellis. The idea struck certain owners some years ago; but that was the age of cast, not wrought, iron; and the results are by no means what they would be if well executed according to our present lights.

The oftener one visits Newport, the more one is impressed with the beauty of the Casino, built, like Mr. Goelet's and Colonel Edgar's houses, by Messrs. McKim, Mead & White. Here, indeed, is something we may be willing to show a foreigner as a measure of our good taste and of our success in artistic independence. In its erection a wholly new problem was triumphantly mastered. It has no prototype in this country or in any other, yet it is so perfect that we can hardly believe it was not the final outcome of a long series of tentative efforts—so appropriate to place and purpose, so consistent from end to end yet so varied between part and part, so thoroughly artistic, so delightfully pretty. If there is anything it needs, it is the more careful planting out of the fences in the second court. These might easily be made to disappear behind vines and shrubberies, and the charming effect of seclusion which reigns in the first court be thus reproduced, in a different way but with the same completeness. Otherwise the planting is excellent. There are trees and shrubs enough, yet not too many, and no formal beds except in just the right spots. The wide lawn in the first court is free from their intrusion, but on either hand, as one enters the gateway, filling the angle between the front building and the wings, is a large, gracefully designed, and pleasingly-colored bed. Thus closely connected with architectural forms, and in a place palpably artificial (in the best sense of the word) from end to end, no features could be more appropriate; and they give just the needed amount of bright color to the softly verdurous general effect.

The most interesting work now in progress at Newport is the laying-out, under Mr. Olmsted's direction, of Mr. Frederick Vanderbilt's place, which occupies a point on the cliff at the turn of Bellevue Avenue. The Cliff Walk, just after bending from a southerly to a westerly direction, here swerved a considerable distance inward to skirt a rocky ravine with steep sides, which breaks the line of the cliff. To regain the space it occupied, and carry it to a more agreeable distance from the house, a bridge has been built over the ravine quite at the edge of the cliff. Lying, I should guess, about thirty feet above the water, which breaks in beneath it over a rock-strewn bed, this bridge is of the simplest possible construction, with small irregular voussoirs in a single round curve. But for this very reason it is both appropriate to its place and admirably picturesque; and the way in which passers will be relieved against the sea and sky, when seen from the house, will make their passing an advantage to the scene rather than an annoyance. I am told that the owners are considering whether it will not be well to adopt a scheme for treating their grounds which will be an entire novelty in this part of Newport. This scheme would confine the lawns and garden shrubberies to the entrance side of the house, and treat the entire seaward slope in the most natural possible way. This portion is largely composed of visible rocks in varied shapes of the most interesting and picturesque character, and it certainly seems as though to plant it with low native shrubs and creepers and wild flowers, simulating, as far as possible, a spot which has not been planted at all, would be the best device. If the house stood farther from its neighbors—on a portion of the shore where conventional, gardenesque treatment has not yet intruded—there could be no possible question about the matter. But it has been objected that just here, with conventional methods of treatment on either hand, harmony will be injured by any deviation from such methods. The place has, however, a comparatively wide reach of water front, and, lying on a point, is isolated from its neighbors to an unusual degree; the ravine, the bridge, and the beautiful rugged rocks seem to demand a picturesquely natural arrangement of its surface; and I think it is certainly to be desired, if one loves either the best kind of beauty or the truest kind of appropriateness, that the new idea may be carried out. But only if there is to be no attempt at compromise. The scheme should be natural throughout or gardenesque throughout. A striking witness to the futility of trying to combine the two results is already shown on that portion of Ochre Point where, on the seaward side of the Cliff Walk, the space is broadest and the rocks are most conspicuous; and it would be a thousand pities were this, perhaps the most beautiful spot on the whole Cliff Walk, to be mutilated in a similar way.

Mr. Olmsted's hand shows again in the drives which, within the past two or three years, have opened up the interior of the southern portion of the island beyond the districts thus far built upon and behind the Ocean Drive. Here the ground is hilly with bold and beautiful high rocks, offering building sites of a very desirable kind—with no sea fronts, it is true, but with the most superb distant views of land and water. The new roads are admirably disposed for convenience and beauty; but it is a matter of regret that the spaces, usually of triangular form, which are formed here and there by their intersections, should have been carefully turfed and planted in a conventional way with young trees and shrubs. Rough grass and Huckleberry bushes and Sumach would have been more in keeping with the character of the landscape as a whole. It is to be hoped that those who may hereafter build in this neighborhood will carefully and artistically preserve its character, and not strive to subdue its rugged and individual charm to that neat prettiness which prevails in the level districts nearer town.

M. G. Van Rensselaer.

New York.

Chinese Horticulture in New York.

AN experiment in Chinese vegetable gardening near New York has established results of some consequence in the course of four years. This industry is conducted with increasing extent on Long Island, chiefly at Woodhaven and at Astoria, with the section including Ravenswood and Steinway, at short distances beyond. The product from these novel gardens, which are known as the *Far yuen*, is already a considerable item as a market supply. It fairly provides for a class of consumers who prize their native vegetables as people accustomed to a largely vegetable diet and who may obtain in New York no less than twenty Chinese varieties of vegetables fresh from western soil.

The *Foo qua* is one of the most abundant of these products seen in market. This is the *Momordica Charantia* or Balsam Pear, sometimes identified erroneously with Egg Plant, and being in other cases confused with the Cucumber, the *Wong qua* of the extended list of edible plants familiar in China. Like the Balsam Apple of the East Indian species of the Momordica, this is a curious trailing plant, with ornamental foliage and peculiar fruit. Its intertwining, matted vine, covering the ground on which it grows, is dotted with small yellow flowers, unfolding continuously until late in autumn. Its fruit, which is sold by weight, resembles the Cucumber in size and general contour. The surface is marked thickly with rounded, oblong formations of varied sizes, raised somewhat like embossed patterns in decorative work. The seeds, in the form of little discs, are figured on each flattened side, as with engraved designs. These are perfectly ripened in Long Island Chinese gardens, where they are dried for use in wide, shallow forms of baskets. The sliced fruit, dried in a similar manner, is a medicinal provision. The *Foo qua* is a specially valued product as used in gastronomical combinations of varied nature. Whether fried with chicken, to form an epicurean dish, or chopped and mingled with pork or cooked in some extraordinary manner with codfish, it is equally the delight of Mongolian consumers.

The *Sing qua* is another of the ornamental Gourds with remarkable fruit not unfamiliar to botanists. This is included in the genus Luffa, of which ten species have been described. It was formerly classed with the Cucumis, from being found allied with it in some of its characteristics. The *Luffa acutangula* is the Chinese variety introduced; the fruit is produced in abundance for the market. In its general shape this is somewhat like the long-necked Gourd, but with ten sharp exterior ridges distinctively marking it in the direction of its length. Its luxuriantly growing vines are trained over poles and trellises, forming lengthy masses of foliage. The yellow flowers continue to appear in the autumn season with the well-developed fruit, which is fully ripened in tropical latitudes only. This product, which is of a sweet taste, is largely used for soup in Chinese cookery, and, in other cases, is prepared like Squash. When very young it may be eaten uncooked, like Cucumbers. As with other varieties of its species, the inner portion of the fruit is spongy, and, when old, forms what may be used as a sponge. The one variety indigenous to this continent is largely represented in such form in the shops. The network formation of the inner substance of the fruit when ripe, is sometimes eighteen inches in length and three inches in diameter. From recent experiments this fruit, known popularly as the Sponge Cucumber, and variously as the Cloth Gourd, the Towel Gourd, the Bonnet Gourd and the Egyptian Bath Sponge, has been brought nearly to maturity near New York from seeds planted in the open ground. The product in the variety reaching Chinese gastronomists in New York amounts to several hundred pounds a year.

A vegetable in great demand is the Mustard Green (*Quon quai*), which is obtained in large additions in pickled form among Chinese importations. This is greatly prized for its flavoring quality in the composition of varied soups and stews. A kind of green, growing like a Lily, in the water, is the *Own choy*, with a triangular form of leaf and a hollow stalk like the Bamboo. A variety known as *Yen choy*, meaning lamb's quarter, is cultivated, and the *Bie choy*, the white-green, with green top and white stalk, is another of this series. The *Tong choy* and the *Long na boe*, or snowflake green, are additional varieties on trial.

The *Ho lan doe*, or Sugar Pea, is satisfactorily developed for the market, and the String Bean, the *Doe goe* of the Chinese, attains a length of two feet under favorable conditions, or about half that of its native growth. The white Turnip, while sweet and tender, is of smaller size than in China or in California. This is of lengthened form, with a weight of possibly fifteen pounds as an indigenous production.

The Chinese Spinach (*Boe choy*) grows much larger here than our common garden species. In full growth its clear white stem is about the ordinary size of the Celery-stalk. It is tender and succulent, growing in the rich soil of its new location. The *Fon qua*, or Pumpkin, of this introduction, is of lengthened form, resembling a club. The *Foo low goe* may be easily identified from familiarity with any other varieties of the Gourd. A more peculiar variety of its species is found in the *Boe qua*, or crescent-shaped white Cucumber. Two kinds of Citrons are produced in diminutive size compared with the growth of the species in China or in Cuba, where the largest specimens of the fruit may weigh fifty pounds or upward. On Long Island the average weight is about two pounds. One variety, with furry exterior like the caterpillar, is known as the *Don qua*. This is largely used in soup, while the *Zit qua* is preserved in the form of sweetmeats. The Lettuce is produced in some quantity as *Shang choy*; Celery as *Hon kon*, and *Yuen si* is Parsley of a high flavor, and corresponding value.

All vegetables are sold in the Mott Street market-places by weight. The exhibition of these is made in baskets, and with single specimens hung by strings outside the doors of Chinese groceries. The production is managed with great care and diligence, the methods being those of China, with only such natural modifications as may be indicated in connection with a fresher soil and with implements of improved varieties in some part adopted.

New York. *E. T. Lander.*

New or Little Known Plants.

Acidanthera bicolor.

THIS plant, which is figured upon page 486 of this issue, belongs to the Iris family, and although the flowers are not as brilliant in color as those of some of the species and varieties of the nearly allied Gladiolus, it is an interesting and valuable addition to the list of bulbs which serve to make the flower-garden attractive during the summer. The bulb is small, not exceeding an inch in diameter, with Gladiolus-like foliage and a lax flower-spike two or three feet in height. The flowers, which are deliciously fragrant, especially in the evening, are long tubed and somewhat pendulous, with a creamy white perianth, marked with broad, chocolate-brown blotches. This plant requires the treatment given to the tender species of Gladiolus, except it is found to prefer a somewhat stiffer soil. It can be propagated by seed or by the small bulblets which it produces in great numbers.

The illustration upon page 487 represents a number of these plants grown together in a tub, which bloomed during the month of October in a garden near Boston. It serves to show the value of this plant, and several others of the same class, for the decoration of conservatories or living rooms, after the frost has destroyed the beauty of out-door gardens.

The flowering time of nearly all these plants can be retarded by starting them late, and, in this way, they can be got to flower, with the protection of a frame or cold pit, considerably later than their usual period, and at a season when flowers are not abundant.

The genus Acidanthera was established by Hochstetter, and the plants which are included in it are distinguished by their pointed anthers, as the name implies. Ten or twelve species, natives of central or southern Africa, are now referred to this genus. *A. bicolor** was first collected by Shimper in Abyssinia and was described as long ago as 1844, although it has never been very well known in gardens, and no figure has been published of it, with the exception of the early and not very accessible one quoted below.

Dorchester, Mass. *W. E. Endicott.*

Foreign Correspondence.

London Letter.

ALTHOUGH the past season has been considered unfavorable to Chrysanthemums, yet the quality of the flowers has, so far, been very satisfactory. The Japanese kinds were exceptionally good at the exhibition of the National Chrysanthemum Society, held this week in the Aquarium at Westminster; indeed, all the cut blooms were considered fine. But we have too many names for these plants, and the proposal that has been made to reform this matter by holding a special exhibition for the purpose next November, comes none too soon. Next year will be the centenary of the introduction of large-flowered Chrysanthemums into Europe, and it is proposed to celebrate it by an exhibition of an exceptional kind. This would afford a good opportunity for dealing with the name difficulty. Roughly, we have about a thousand names for Chrysanthemums, and new ones are added by the dozen annually. You in America are held responsible for a good deal of double naming, more especially among the Japanese kinds, for you import new kinds direct from Japan. These you give your own names to. We get them, too, from Japan, and name them, and afterwards find that some of ours are identical with yours. However, a few new ones have lately been raised in England that are good and well marked. Such is Stanstead Surprise, with very large flowers, the petals of good substance, curled and colored rich crimson, fading to pink, the under-side being silvery; Alpha, Album Fimbriatum, William Holmes and Mrs. J. Wright are others. But the flower of this year is Edwin Molyneux, of which some gigantic blooms were shown at the Aquarium, and were greatly admired by the crowds. Probably the desire for big flowers is a little absurd. They are certainly lacking in beauty when seen on the plants, and on the exhibition table they are misleading. After all, the right place for a flower is on the plant which bore it, and the best Chrysanthemum is that which makes the prettiest picture as a whole.

The most striking of the newer Orchids flowering now is *Cattleya Bouringiana*. This plant is certain to become as popular for winter flowering as its near ally, *C. Skinneri*, is for spring. These two species resemble each other very closely; in fact, much more so than many others which are recognized only as varieties. Still they are distinct enough in their seasons of flowering, and *C. Bouringiana* has the advantage in that it blooms when Orchid flowers are scarce. It requires the same treatment as *C. Skinneri*, and is one of the freest of all Cattleyas in respect of growth and flowers. The latter are rose-purple; the lip, which is funnel-shaped, being maroon-purple with a white blotch in the throat. *Cypripedium Elliottianum* is the latest of Mr. Sanders' grand list of new introductions. This enterprising nurseryman has done more to enrich Orchid collections than any other importer of recent years. Within a very short time he has introduced *C. Sanderianum*, *C. Rothschildianum* and *C. Elliottianum*, a magnificent trio, certainly. The last is named in compliment to Mr. Elliott, of your city. It has the habit of *C. Stonei*, and very large handsome flowers on scapes about a foot high. The dorsal sepal is one and one-half inches wide and two

* *Acidanthera bicolor*, Hochst. in *Regensb. Flora*, 1844, 25.—Bouche & Wittm. in *Berlin. Monat.*, xix., 12 t., 1. Baker in *Jour. Linn. Soc.*, xvi., 160.
Ixia Quartiniana, A. Rich, Fl. Abyss., ii., 310.
Sphærospora gigantea, Klatt in *Linnæa*, xxxiv., 699.

and one-fourth inches long, white, lined with crimson; the petals are white, blotched and lined with crimson, narrowed towards the apex and about six inches long; the pouch is like that of *C. Stonei*, ivory white, veined and tinted with rose. A thousand plants of this new introduction will be sold by auction on the 16th inst. *Phajus callosus* is a recent addition to the Kew collection, and is now in flower. It has the habit of *P. grandifolius*, but the flowers have yellowish-brown sepals and petals, and a funnel-shaped white labellum, which changes to cream-yellow with age. This species, together with *P. Wallichii*, *P. bicolor* and *P. grandifolius*, should be in every collection of tropical Orchids, as they grow and flower very freely under ordinary treatment. Such kinds as *P. tuberculosus* are too expensive to procure, too difficult to grow, and too prone to die suddenly for most Orchid growers, albeit they are exceedingly beautiful when in flower. We have a Cypripedium mania in England—indeed, one might safely say in Europe—and there are evidences of its having spread to America, for a single plant of *C. Marshallianum* was lately purchased at an auction here for an American collection, the price paid being 150 guineas. In my opinion this plant has little to recommend it save its hybrid origin, and its being a little less beautiful than one of its parents, *C. concolor*, and a little more attractive than the other parent, *C. venustum*. Hybrids which are ugly to look upon, which none save those affected with the mania would waste a second glance upon, realize ridiculously high prices. The consequence is that every grower of Cypripediums has begun to cross them, and hopes for something new. In a few years we shall have as many named Cypripediums as we now have of Chrysanthemums, for it appears that every hybrid is dubbed with a new name.

In an article on the culture of Phalænopsis which lately appeared in GARDEN AND FOREST, it was stated that *P. Lowii* was apt to lose its leaves in winter, and that it required a light position. This pretty species is grown very well at Kew, last year producing branching spikes nearly three feet long, with over thirty flowers on each. The treatment there for it is as follows: House, a hot, moist, rather shaded one, with the plant suspended near the glass. It is fastened on a teak raft with a good layer of living sphagnum about the roots. During summer it is watered daily; in winter the moss is kept green. The leaves remain on the plant all the year round, and strong spikes of bloom are produced annually.

Mr. Cannell, of Swanley, has introduced and raised many very useful flowering plants, but it is questionable if he has ever made such a lucky hit as with his new Begonia Octavie, of which he had a magnificent group at the Aquarium show. The flowers are exactly like good blooms of *Gardenia Fortunei*, quite as white, as full, and of as good substance. The plants are scarcely a foot high, freely branched, and the racemes are erect and many flowered. It is only by examining the leaves that one is assured of the correctness of the name Begonia for this plant. Flowering in November, it becomes doubly valuable.

These new Begonias, which the Messrs. Veitch have obtained by crossing the distinct winter-flowering *B. Socotrana* with some of the tuberous-rooted kinds, are unlike other Begonias in several important particulars. The most valuable is that of holding their flowers for several weeks, which if cut and placed in water will last at least three weeks. I have proved this with flowers of *B. Socotrana*, as well as of its progeny. The best of the latter is John Heal, which has rosy-crimson flowers. Winter Gem is another good variety, and I hear there are several new ones of the same race which are described as considerable improvements on those named.

Ipomœa Horsfalliæ, *I. ternata* and *I. Briggsii* are three first-class, stove, winter-flowering climbers. The first is an old favorite, its large axillary bunches of brilliant rose-crimson flowers being admirable in every way. The second is sometimes known as *I. Thomsoniana* or "the white Horsfalliæ," and was introduced a year or two ago. It resembles the first named in habit, but the leaves are thicker in texture, and have three instead of five divisions; the flowers are large and pure white. *I. Briggsii* is a variety of *I. Horsfalliæ*, and is characterized by its smaller flowers, which are deep rose-colored. These three species are now bearing hundreds of flowers in the stoves at Kew.

Cacti are not popular in English gardens. *Opuntia Rafinesquii* is grown by a few, but most of these plants are practically unknown here. Probably you have in America other kinds than the Opuntia mentioned, which would be hardy in England. Information on these would be specially interesting to English readers of GARDEN AND FOREST.

November 9th. *W. Watson.*

Cultural Department.

Summer Apples in New England.

THE planting of Apple trees must have been begun in the very earliest years of the settlements at Plymouth and Boston, if we are to believe the statements, taken from old records, of the large quantity of cider made before these settlements were ten years old. Doubtless most of these trees, if not all, were grown from seeds brought from their old homes by the settlers. Grafting was but little known or practiced, and even up to the beginning of this century, and in many parts of the country considerably later, seedling orchards, in which only here and there were trees producing fruit of edible quality, were the rule.

It was, doubtless, a good thing in the end that such a great number of seedling trees was allowed to grow and bear fruit, since among these have been found nearly every popular and profitable Apple now grown in this country. Foreign varieties have never gained any great foothold in New England, and, with the exception of Russian Apples, valued especially for their hardiness against the severe cold of northern New England winters, they are not likely to do so, because very few of them equal our own best sorts in all that makes these fruits desirable.

Up to 1840 commercial orchards, except for cider, were almost unknown, nearly every family, even in the cities, growing fruit enough on its own grounds for a home supply. It was the easy intercommunication between the residents of the larger places which first popularized and extended the cultivation of the best known sorts of fruit. In all villages were sons and daughters of farmers, who rapidly spread the knowledge of choice fruits to the homesteads from which they sprang, and, as the interest grew, small nurseries were established near the towns for the propagation of these selected Apples. In this way a lively spirit was awakened, and between 1835 and 1850 orcharding, as now understood, had a very rapid growth and development. During this time and afterwards, the springing up of the Washingtonian temperance movement led to the destruction of large numbers of the old cider-orchards, and, though some such still survive, most of the orchards in New England now mainly consist of grafted trees.

The Massachusetts Horticultural Society did a most useful work in disseminating a knowledge of good sorts of fruit, and although modern means of transportation were unknown, yet all through the settled region—in every village and hamlet—there were some persons who managed to secure, grow and extend the knowledge of the best varieties. During that time most of the Apples were selected which still constitute the standard list, both for commercial and home use.

The first summer Apple that became widely known was the Early Harvest, styled by Downing "the finest early Apple yet known." Before its advent the American Summer Pearmain was considered the best early Apple, though in Maine the English Sops of Wine, known there more generally as Bell's Early, was found to be more suited to the climate. Shortly afterwards the William's Favorite, which originated within the present limits of Boston, began to be known, and it now takes the lead as a choice market variety. Everywhere the Harvest was planted, but in very few places has it ever grown perfect fruit long. While the trees are young this Apple is often very fine, but in a few years the scabbing and cracking fungus gets a hold upon it which is rarely broken. For this reason the Harvest has never been much of a market Apple in New England. The Pearmain has almost passed out of cultivation, and is rarely seen upon the street-stands, which contain mostly the Red Astrachan. The

Fig. 75.—Acidanthera bicolor.—See page 484.

Favorite requires high culture to bring out its merits, but so grown it takes the first place in the better class of fruit-stores, though inferior grades are freely sold on the street. The new Russian Apple, Yellow Transparent, is beginning to be seen, and, as it is so easily grown, and comes so soon to bearing, it is likely to rival the Favorite in popularity. These two Apples are about of one size and shape; the one a solid, rich red, and the other a clear, straw yellow. Among the summer sweet Apples the Sweet Bough stands first; but sweet dessert Apples are comparatively little in request, and not common on the stands or in the shops. I give the name by which this Apple is commonly known, though Downing gives preference to Large Yellow Bough. I frequently hear it called still "Sweet Harvest," though not so often as when it was more often sold with the Early Harvest. As we go northward we find Sops of Wine and Red Astrachan—the first in Maine, and the other all through Vermont and New Hampshire, as well as Maine. In Vermont, especially in the Champlain Valley, the Summer Pippin (locally known as "Paper-skin," and elsewhere in the State as "Champlain") has great

popularity. This Apple is large, handsome and excellent in quality. In northern Vermont its season extends into September. Away from Lake Champlain it is not much cultivated, and is comparatively little known elsewhere in New England, being more especially a New York Apple. I think it nowhere grows so large and fair as on the Champlain shores and islands. Its New York synonyms are Haverstraw Pippin, Nyack Pippin, Geneva Pearmain and Walworth. In Massachusetts the Foundling occupies about the same season as the Summer Pippin, while the Duchess of Oldenburgh comes into market before August expires.

The Early Strawberry, Early Joe and Primate are seen as summer Apples quite frequently in New England, but mostly imported from states south and west. In Maine, two native Apples of merit—Cole's Quince and Moses Wood—may be classed as late summer, though mostly maturing and marketed after the first of September. In northern Maine, New Hampshire and Vermont the Yellow Transparent is the only Apple which ripens its entire crop before September.

The Summer Apples of Rhode Island and Connecticut include all of those in favor in the states north, with the addition of a number of sorts which would there be rated as "early fall."

In regard to what is known as the failure of varieties, there can be no doubt that some of our finest Apples, especially among the summer sorts, require high cultivation to be permanently productive and profitable. These trees produce as large fruit as later sorts, and in equal abundance. It is reasonable, therefore, that they should be well fed and cared for, and the fruit properly thinned. When these things are done the fruit is larger and fairer, and the trees maintain their vigor much longer. The profit, in all fruit-culture, comes from the largest and fairest fruit, and this is not gathered from neglected trees.

Newport, Vermont. *T. H. Hoskins.*

Fig. 76.—Acidanthera bicolor, grown in a tub.

Green-house Climbers for Cut-flowers.

Clerodendron Thompsonæ.—This handsome and showy plant, belonging to the scandent section of the Clerodendrons, is a particularly useful climber for cut-flower purposes, being most effective for basket-work or dinner-table decoration, where its bright crimson flowers, with their pure white calyxes and their naturally graceful habit of growth, produce a charming effect. It is of easy culture, but it produces better and more abundant flowers if it has a season of rest to properly ripen the wood. *C. Thompsonæ* does best when potted in light loam, to which is added a moderate quantity of dry cow or sheep manure, and an occasional watering with liquid manure

will also improve the growth. It should be grown in a warm, light house, with just shade enough to prevent the foliage from scorching, and it needs frequent syringing to keep down red spider. This treatment should be persevered in until August or September, or later if desirable, when the supply of water should be gradually decreased until the wood has ripened and the foliage dropped off. The period of rest should be from two to four months, after which it may be started into growth again, and will soon give an abundant crop of flowers. Probably the easiest method of propagation is by root-cuttings, made by cutting moderately strong roots into lengths of from one to two inches. These should be placed in pans of light soil, and the pans should be set in a cutting-frame or on a bench having some bottom-heat. Here the roots will soon start, just as some of the Bouvardias, Aralias and other plants do when similarly treated.

Stephanotis floribunda.—The handsome, dark green, glossy foliage, and pure white, fragrant flowers of this excellent plant are well known, and its free habit of growth makes it one of the most useful of white-flowered climbers. It will grow very well in an intermediate house, where the temperature ranges from fifty-five to sixty degrees, and, if space can be spared for it, it will grow more rapidly when planted out and the shoots trained on wires attached to the roof of the house, but if it is not convenient to grow it in this manner it may be put in a pot or tub and trained on a balloon trellis. The soil most suitable for it is composed of light loam and peat in about equal proportions, with a liberal allowance of sand and a little broken charcoal, and in mixing the soil it is better not to break it up very fine, as the plant does best in a rather coarse, open soil, and needs free drainage. The Stephanotis is readily propagated, either by cuttings or from seed, but some growers prefer cuttings, on the ground that the plants so produced are more floriferous than seedlings. The cuttings should be made of moderately hard wood, and if given some bottom-heat they will emit roots in a few weeks.

Passiflora racemosa (*princeps*) is another beautiful climber, and when well-established it produces its bright red flowers all the year through. The long and graceful flowering sprays of this plant are specially adapted for draping around large flower-vases or for mantel-decorations; and used in this way they are very striking and effective. This plant is also of easy culture, its chief requirements being good drainage, a moderately light soil and a temperature of about sixty degrees.

Watering with liquid manure at intervals during the growing season is beneficial, and care should be taken to prevent the mealy-bug from gaining a foot-hold, as when this pest becomes established on plants of this class it is difficult to exterminate it. *Passiflora racemosa* may be increased by cuttings or by grafting, and in the latter case either one of the free-growing Tacsonias or one of the other Passifloras of rapid growth, such as *P. Raddiana* (*Kermesina*), may be used as a stock. Grafted plants usually make more rapid growth than those on their own roots, and therefore that plan for increasing them is generally adopted.

Philadelphia, Penn. *W.*

Soils.

THE importance of special soils for the different genera or species of plants is often overrated, and the different formulas found in the cultural instructions of various catalogues and works on horticulture are often useless or misleading. These specific directions as to soils have frightened many persons from growing plants both in the open air and in window gardens. American writers are comparatively free from mistakes in this direction; but in nearly every foreign publication on this subject the peculiar soil in which each plant should be grown is carefully described, and too often the mixtures recommended can only be obtained at an expense that amounts to prohibition. It often happens, too, that the directions laid down with such care are ludicrously useless, for our climate at least. For instance, an English writer asserts, "To grow Portulaca well it should be given a soil composed of turfy loam, leaf-mould, well-rotted manure in equal parts, and a little silver sand added." For a plant that comes up so freely everywhere as to become a troublesome weed, this attention seems quite unnecessary.

The simple preparation of the soil according to rule would require a considerable amount of labor, even though the materials were at hand. Few persons would think of taking so much trouble for a choice and costly plant, much less for those that thrive in neglected places.

The fact is, that where common vegetables will grow, flowering plants will grow, and if the books say turfy loam, and you have a clayey soil, or a sandy loam, put in your seeds, bulbs, plants or trees without fear. Hoe frequently and thoroughly, and good fruits and flowers will be the result. It is true that some soils are more productive than others, or are easier or more difficult to till; some require more manure than others; and yet any soil that will produce good Beans, Beets or Potatoes will produce flowers as well. And soil that is best for vegetables in the garden is best for plants in pots. Exhausted soil will not produce good garden crops. You can no more draw from the soil without making deposits than you can from your bank. If you overdraw in either case your drafts will be dishonored. And as the amount of soil in pots is of necessity limited, it should in all cases be made strong and rich. The best soil for this, or any other purpose, is well-rotted sod, and this can be procured anywhere. Take sods from the road-sides or meadow, pile them up in any convenient out-of-the-way place, and let them rot, and you will have all the elements that contribute to the growth of plants. The best time for this work is in early spring, when the turf is fresh and green; then the roots will die quicker than at any other time. It is by no means necessary for the roots of the grass to become thoroughly rotted; all that is required is to have them killed, as the growing plant will feed upon the old turf as fast as it is decomposed. Plants grown in this soil will be strong, healthy and floriferous. A more rapid growth will be induced if a liberal proportion, say one-fourth, of well-rotted manure is added, in which case more weeds and worms must be contended with, but all trouble will be repaid by the increase in quantity and quality of bloom. Young plants intended for summer blooming in the garden should be grown in soil without manure, if it is naturally rich and not too heavy. Plants grown in such a soil will be healthy, and when planted out in the garden, they will have strength to assimilate all the food prepared for them, and will make a far stronger and more rapid growth than if stimulated at the outset in a very rich soil. The most successful Rose-growers use nothing but rotted sod for young plants, and the almost universal satisfaction their young stock gives, is due to this fact alone. The largest plant-grower in this country, if not in the world, has but one soil for everything, but one compost heap, and that is rotted sod. No doubt good peat or leaf mould will benefit a stiff, clayey soil for many exotic plants, and certain plants indigenous to a given soil and locality will thrive better there than anywhere else; yet the soil in which any plant is found in its native state is not always necessary for its perfect development. Indeed, many plants will not succeed as well in a soil that is natural to them, when they are grown in a different country, where climatic influences are different; for instance, the Cactus, or, at least, most of the genus, is found growing in arid wastes, but, introduced into green-houses, they will not thrive in the soil brought from their native habitats. The different atmospheric surroundings make a different soil necessary. Earth and air must work in harmony together to produce the plant.

Again, it is true that all plants cannot be grown equally well in a clayey or in a sandy soil. But your soil will need no more manipulation for flowers than it does for vegetables. Work well the soil you have, give it food if exhausted, drain it thoroughly if wet, but do not be discouraged in planting bulbs, seeds or shrubs, because you have not some special soil recommended in the catalogues and trade journals.

Garden City, New York. *C. L. Allen.*

Top-dressing for Trees.—Now is the time for top-dressing around evergreens and other choice trees and shrubs. First clear out dead grass and leaves from under the young Conifers, as they afford a favorite lodging-place for field mice, which are so destructive in winter in gnawing off the bark of trees. And in place of what is removed return a dressing of rotted manure under and around the trees. At Mr. G. W. Childs' place, near Philadelphia, I lately observed that a heavy dressing of manure, and sometimes of loam and manure, was being strewn under and around the trees, whose splendid vigor is ample testimony of their appreciation of this generous treatment.

Pruning Trees.—Now that the trees are leafless, we can readily see where branches cross and rub each other, where some project too far, where the trees are too thick or are lopsided, and we should prune accordingly. Avoid heavy pruning. Cut off clear all stem and root sprouts. And where it is necessary to cut off large branches, saw them off short, then smooth over the cut with a sharp knife or small plane, and paint the wound to exclude moisture and prevent rot. In some trees, Lindens particularly, we often find diseased branches; cut these quite out at once, for there is no cure for them. In other cases, branches of Yellow-wood, Willow

or Thorns are badly infested with bark-scale, and I have never found a sure, practical cure for this pest except by cutting out and burning the affected branches. This scale sometimes takes such full possession of Lilacs as to compel the sacrifice of the plants. In the case of Oaks, Beeches, Maples, and other large trees which no longer need pruning to regulate their growth, we can do little now, because the dead twigs and limbs cannot be readily distinguished among the leafless branches. Cutting these away should be attended to when the trees are in full leaf. Where it is necessary to remove trees in order to open vistas, or for other purposes, the trees should always be rooted out and not cut down; the stumps should never be left in the ground. Sometimes beautiful views across the country can be seen over the tops of a clump of trees. See to it that these trees are headed so low that they do not intercept the view in any way.

Pruning Shrubs.—In pruning shrubs we wish to preserve symmetry of form and promote vigor, and at the same time to secure a profusion of flowers. Shrubs that bloom in spring on the previous year's wood should not now be pruned, but rather after they have done blooming. These include Daphne, Forsythia, Bush Honeysuckle, Japan Quince, Red Bud, African Tamarisk, Corylopsis, Snowball and the early blooming shrubby Spiræas. But such shrubs as bloom on the current season's wood should be pruned now, and in some instances quite severely back. These include *Hydrangea paniculata, Lespedeza bicolor,* Althæas, Chinese Tamarix, Stuartias and the like. *Desmodium penduliflorum, Hydrangea radiata, H. arborescens* and *Callicarpa purpurea* seem to do best when cut down close to the ground every year.

Out-door Roses.—Roses should not be pruned at this time of year except to cut in very long shoots. If pruning is deferred till spring, we can cut back into the living wood, where the tips have been winter-killed. Prairie Roses and other climbing varieties grow late in the fall, and these late-formed, sprawling growths should be cut away or tied up, for tidiness' sake. If *Rosa rugosa* has outgrown its bounds, dig around it deeply and remove all suckers; these make capital plants for a fresh plantation. Also save the seed hips and sow them now in boxes of sandy soil in a pit or green-house, or if you do not want them yourself, exchange them with some neighboring florist for something that you may need. Although this Rose reproduces itself freely from suckers and seed, it has never become very plentiful. Moderately tender Roses, that need a little protection in winter, can be bent down and covered with earth. But, usually, a good mulching of littery manure over the roots, or, if the shoots are bent down, over them as well, will suffice. Evergreen branches laid over the bushes are also a good protection. Tea Roses are safer if lifted now and heeled into a frame or potted and plunged in a frame till spring. Hermosa, Mrs. Degraw and some other Bourbons get cut back to the snow line or near it every winter, but this does not seem to injure them, and, when pruned in closely, they throw up vigorous, free blooming shoots. *W. F.*

Glen Cove, New York.

The Forest.

Do Forests Influence Rainfall?

IF I could find the place on the earth of which it was first and emphatically said, "It never rains but it pours," I am convinced that it would be a plain largely deficient in forest-growth. For, if there be an influence upon moisture conditions of the atmosphere exerted by forest areas—and such areas must not only be of sufficient size, but also densely enough covered to exert their proper influence upon temperature and moisture within and without—it consists, I believe, in a more equal distribution of precipitation with reference to space and time.

In the end, what does it matter whether it is by increased precipitation that the forest benefits the field, or whether the same physiological effect is produced by increased relative humidity in other ways, or by raising the water level and increasing or advantageously disposing of the available water supplies through favorable ground-water conditions or surface channels?

As this question of forest influences is one which, to a great extent, underlies the demand for national interest in the forestry problem, it may be of advantage to review briefly the methods which have been employed to solve the question. Space will not here allow a critical consideration of the value of each method, which may be done at some future time.

As is natural, the first suggestion that a relation between climate and forest-areas exists, came from general observation. History testifies that districts once surrounded by verdant groves, with fertile soil and favorable climate, have become inhospitable and desert wastes, with treeless mountain-sides, and the conclusion follows that there is some connection between the forests on one hand and fertility and genial climate on the other. This method of proving the proposition, which has been the most popular, and is still largely in vogue, may be called the historico-statistical. Among the eminent men who have used this method may be mentioned Du Monceau, Reaumur, Buffon, Humboldt, Arndt. It is not to be entirely discarded now, but its results must be adopted with caution, for not only are the reports of the facts in many cases dubious, but the inferences are not always reasonable.

About the middle of this century, with the development of physical, and especially meteorological science, a second method was applied. This method attempted, upon a theoretical basis, to discuss and reason out the assumed relation by employing the accumulated physical and meteorological data, which, scanty at first, has lately been considerably increased. Among the prominent meteorologists to employ this method first was Becquerel. The results of this method have brought us considerably forward in the determination of the direction in which an influence would be possible, or even probable; and while it has not been able to either prove or disprove satisfactorily the existence of this influence nor advanced our knowledge of its degree and quality, it has cleared the way for a more scientific consideration and investigation of the subject.

The next step and method of demonstration employed was the mathematical one, using numerical data which had either accumulated independently of the question or were specially provided for the purpose. We have here to distinguish two methods, a wholesale and a retail one, if I may so express it, or, more scientifically speaking, the one using large averages and comparing data from extensive areas, though not specially provided for this end; the other comparing data obtained for the purpose in limited localities by direct detail measurements within and without forest areas. The latter method, which I call the retail one, is the one now largely adopted by German investigators.

The first attempt to obtain, for the settlement of this question, a series of exact, methodical observations, dates back to the year 1864, when Dr. Ebermayer, Professor at the University of Munich, constructed the necessary apparatus, and with the aid of the Bavarian Government and Forest Administration established in 1866 the first three double stations, where a set of meteorological instruments were observed within a forest area, and another set simultaneously in a field. In the following year the number of the double stations was increased to six. In 1869 Switzerland followed with three stations; in 1870 Italy established a station, and in 1874 to 1877 Prussia entered upon this field of work, having now sixteen stations in connection with the forest experiment stations; and to-day quite a number of double stations are collecting data in all parts of the country.

The points of observation at the Prussian stations are chosen 200 metres (about 664.5 feet) distant from the edge of the forest within and without. An enormous amount of material has accumulated, but as yet has not been summarized or turned to account. It is difficult to see how anything else can be demonstrated by it than what is already known—namely, that the meteorological conditions within the forest are different from those prevailing without. Whether the forest conditions are communicated to the open field, and to what degree, if at all, can certainly not be proved by the data obtained. By establishing points of observation in the field at varying distances, it might have been possible to demonstrate the presence or absence of climatic interaction between forest and field.

In the wholesale methods, which use data obtained over large areas independently of the special objects of this investigation, we may again discern two ways of handling them: the one comparing the data found during various periods at the same stations and bringing them in relation with forest conditions existing at the various periods; the other comparing data obtained simultaneously from stations situated differently as regards other climatic influences. The first method has been employed by Mr. Gannet and Mr. Harrington. Mr. Gannet endeavors to establish by a combination of data that neither for Ohio, which has been largely cleared, nor for New England, which is said to have largely increased its forest area, nor for the Prairie States, which contain more timber in recent times than formerly, can a noticeable difference in rainfall be demonstrated. In fact, however, he only proves that his method leads to no certain result for lack of adequate data to work upon. Mr. Harrington's method fails to be con-

clusive for the same reason—lack of proper data. He arrives at the opposite result from that of Mr. Gannet for the same region by comparing the position of isohyetal lines constructed for two different periods about thirty years apart.

The second class of wholesale methods, which compares data simultaneously obtained from stations differently situated as regards forest conditions, has been lately employed by the eminent Russian climatologist, A. Woeikoff. He chooses an area in northern India, which is partly a treeless region and partly densely wooded, and is otherwise uniformly situated with reference to other climatic influences. He concludes from his data that, at least for sub-tropic regions, a forest cover has the effect of reducing temperature extremes and increasing precipitation.

Woeikoff further investigates whether the influence of the forest upon the climate of surrounding areas may also be proved for latitudes of thirty-eight to fifty-two degrees north—all the West European Continent—and he proceeds as follows:

Taking the temperature of July as that of the warmest month, and assuming that, on the whole, the temperature at the Atlantic coast is lower and rises toward the interior of the continent, he compares the temperature of a number of places situated near the fiftieth degree, the observations being all taken outside of the forest. To bring them upon a uniform basis for comparison, he assumes an increase of temperature of 0.5 degrees, centigrade, for each degree of latitude towards the south, and a decrease of 0.7 degrees for every hundred metres of altitude. By an easy calculation he then obtains the mean July temperatures for every station in this line, reduced to exactly fifty degrees, north latitude, and 200 metres of altitude.

The result is that in this series a rapid rise of temperature appears from the Main River, eastward, then a considerable reduction in the eastern and western Bohemian stations, where large forest areas prevail, while in the Bohemian basin the temperature is higher, as it is also in Silesia, and again much lower in the well-wooded Carpathian Mountains of Hungary. The apparent influence of these large wooded areas is still noticeable in east Galicia as far as Kiew, where the neighborhood of forest and morasses works in the same direction, while in the Steppes the highest temperature is reached.

In the same manner a series of stations lying on or near the forty-sixth degree are treated, reducing their July temperatures to the theoretical temperatures for the forty-sixth degree and 200 metres of altitude; and another series of stations is worked out for the forty-fourth degree in Croatia, Bosnia, Herzegovina, Dalmatia, and here the heavily wooded Bosnia is found from twenty-five to forty-five degrees cooler.

The results of these comparisons lead the author to conclude that in the western part of the continent large forest areas influence the temperature of neighboring localities, and interrupt the normal increase of temperature from the Atlantic Ocean into the interior of the continent to such an extent that even regions far in the interior have a cooler summer than those nearer the sea.

He concludes further, not only that there exists a climatic influence of the forest, but that it exerts itself over considerable distances according to the size, kind and position of the forest areas; that, therefore, forest-planting or deforestation offers a means of changing a climate considerably.

Another modification of this method has been employed by H. F. Blanford, and by Dr. Brandis, late Forest Inspector-General of British India, by comparing the records over a confined area (61,000 square miles and 600,000 acres, respectively) during a decade of forest destruction and a decade of forest protection under government regulations. In both cases a progressive increase of rainfall is observed in the second period, until the mean increase within ten years has been twenty per cent. and twelve and one-half per cent., respectively, for the two areas thus reforested.

The latest interesting, instructive and quite novel application of the wholesale method is that employed by Dr. F. J. Studnička, Professor of Mathematics at the University of Prague. It consists in comparing the rain records of stations differently situated as regards forest conditions, after the records have been reduced to a theoretical quantity which corresponds to the altitude of the station. To understand the significance of these observations, the reader should refer to a map of Bohemia, and note its peculiar geographical position, being a basin shut in on all sides by high mountain ranges, inclosing an area of about 20,000 square miles.

This basin has been covered with a net of over 700 rain-gauge stations, for the purpose of obtaining accurate data of the quantity and distribution of precipitation over the kingdom. Uniform ombrometers (rain gauges) were used and very carefully placed. As at present organized, there is one station for every thirty square miles. No other country, I believe, can boast of such a service. Although the time of observation at most stations has been short, and the averages would have been more accurately represented by an extension of observations for ten to twelve years, yet the last four years of observation, for which all stations furnish data, according to the author, represent two extreme and two average years, and are therefore quite useful.

The very large mass of material permitted a sifting out of doubtful observations without impairing the number available for the construction of a rain-map of Bohemia, showing by isohyetal lines seven rain belts or zones, the lowest belt showing an annual rainfall of less than twenty inches, the second a rainfall of less than twenty-four inches, the third of twenty-eight inches, and so on.

Sufficient material was on hand from which to calculate the influence of altitude on the increase of precipitation, although for altitudes above 1,600 feet the material is not considered reliable. Yet the general law is well shown that with the altitude the quantities of precipitation increase in a retarded progression. This progression is calculated by forming zones for every hundred metres of altitude, grouping the stations in each, calculating the mean elevation and also the mean precipitation as observed for each; then by dividing the difference of precipitation in the neighboring two zones by the difference of altitude, the amount of precipitation which corresponds to each one metre of elevation within that zone is found. With this figure the average amount of rainfall which, theoretically, belongs to each station, according to its absolute elevation, can be approximated by adding to or subtracting from the mean precipitations of the zone the proper correction for the number of metres between the actual altitude of the station and the mean altitude of the zone.

And now comes the application of this method to the question in hand. The author argues that if the actually observed differs considerably from the theoretically calculated rainfall, this is an indication that special influences are at work. He finds now that of the 186 stations which he subjects to scrutiny (these offering the longest and most trustworthy observation), forty-eight show a considerable excess of the observed over the theoretically expected rainfall, and he finds also that these stations are situated in the most densely wooded portions of the kingdom. The increased rainfall on the forty-eight stations is so considerable, that enough of it may be credited to other local causes, as, for instance, to the height and form of a mountain range on one side or the other, and still leave a large balance to be accounted for. Besides, the greater amounts of rainfall at these stations have been used in calculating the averages for the altitude zones, magnifying, therefore, these averages, so that the difference between the calculated rainfall and the actually observed rainfall appears smaller than it really is.

Expressed in percentages of the amount of precipitation a large increase is shown for several localities—as much as fifty-nine per cent.—and it would seem that so great an increase would not lose its significance as bearing upon the main proposition, even after every reduction for other influences is made.

Especially important appears the comparison between two stations near the rain minimum, for the influence of the forest is here plainly shown.

B. E. Fernow.

Washington, D. C.

Correspondence.

Latinized Names of Garden Plants.

To the Editor of Garden and Forest:

Sir.—I take the liberty of applying to you as an acknowledged authority on botanical nomenclature, for information. I find that there is in the formation of a certain class of botanical names a great diversity of practice existing among the various writers for horticultural papers and those who prepare catalogues of plants. Is there any reason why I should write Ainsworthii, Warnerii, Forstermannii, Nilsonii, Parishii, Roebellenii, Sallierii, Schlimii, and at the same time write Regnieri, Barteti, Boxalli, Sedeni, doubling the final -i in the one case and not in the other?

Linden, of Brussels, in his *Lindenia* uses the single i in all such instances. Sometimes in the same catalogue I find the same name formed at one time with a single -i and at another with the double. If you can give in your valuable paper any rule for the formation of these words you will greatly oblige

Yours very truly,

James R. Pitcher.

Short Hills, N. J.

[This question cannot be answered more clearly than by quoting the following extract from the Code of Nomenclature adopted by the American Ornithologists' Union, and as applicable to botanical as to zoological names:

"In Latinizing proper names, the simplest rule appears to be to use the termination *-us*, genitive *-i*, when the name ends with a consonant; . . . and *-ius*, gen. *-ii*, when it ends with a vowel, as *Latreille, Latreillii*, etc. Since proper names for species, however, are used mainly—and we recommend that they be so used exclusively—in the possessive case, a still simpler and now generally adopted rule is to add an *i* to the name; as *Latreille, Latreillei; Hale, Halei; Baird, Bairdi;* but euphony may in some instances require the fuller form, and here, as in many other instances, is the case where an author has the opportunity of displaying his good taste."

The habit of Latinizing the names of garden varieties of plants—whether the result of natural variation or of artificial hybridization—is to be deplored. A much more simple and appropriate method is to use an English substantive to designate such plants, whether it be the name of the individual who originated or made known the variety, or otherwise. The general adoption of such a system of naming garden plants would simplify enormously the confusion which now exists in the nomenclature of garden botany.—ED.]

Recent Publications.

A Provisional Host-Index of the Fungi of the United States. By W. G. Farlow and A. B. Seymour. Part I. *Polypetalæ.* Cambridge. August, 1888. Privately printed.

American mycologists and all students of American Fungi will find much needed assistance in this catalogue, which its authors have prepared and printed in the belief "that an approximately complete list of our parasitic species and their hosts would aid materially in the advance toward a more accurate study of our mycological flora, and would tend to lessen the amount of indiscriminate species-making which has already become a serious evil"—a result certainly most devoutly to be prayed for by all botanists. The host plants are grouped by families according to the system adopted in the "*Genera Plantarum*" of Hooker and Bentham, genera and species being arranged alphabetically in each family and each species being followed by a list of the parasitic Fungi found upon it.

Diagnoses Plantarum novarum Asiaticum, by C. J. Maximowicz, extracted from the Bulletin of the Imperial Academy of Sciences of St. Petersburg. The seventh part of this work, which is invaluable to all students of the botany of the countries of eastern Asia, and more especially of Japan, has recently appeared. It contains descriptive and critical remarks upon several new or imperfectly known species, an enumeration of the species of *Illicium, Scorzonera, Androsace* and *Gratiola*. An account of the large and widely distributed genus *Pedicularis*, into which are admitted nearly 250 species, occupies a very considerable part of the present issue, and is the most complete and comprehensive which has yet appeared.

A Synopsis of the Medical Botany of the United States, by J. W. Carter, St. Louis, 1888.

This is a list of the plants of North America which enter more or less regularly into the American Pharmacopœia. There are, the author tells us in his preface, 1,300 species and varieties of such plants, divided among 140 natural families and 620 genera. The list of these plants is published without characters or geographical distribution, and with the very briefest possible allusion to their medicinal properties, and it contains apparently no information not found in recent editions of the standard American Dispensatories, although the compact grouping of the species under the different genera will be found, perhaps, an aid to ready reference.

Recent Plant Portraits.

Botanical Magazine, November.

PHAJUS WALLICHII, *t.* 7023; one of the stateliest and largest flowered of all Orchids, widely distributed in the tropical portions of southern India, and not rare in cultivation. The flowers vary from chocolate-brown to pale primrose color.

PLUMUS FRAGRANS, *t.* 7024; a small Chilian tree of little ornamental value, but remarkable for the delicious fragrance of its foliage and wood. It is valued in Chili for charcoal making, the wood being considered superior for that purpose to that of any native tree. The dried leaves and twigs are occasionally used medicinally as a stimulant. The bark is used in tanning and the aromatic fruit is edible. *Plumus* belongs to the small order, *Monimiaceæ*, the plants of which are found in tropical America and Asia, Australia and tropical Africa.

IRIS KOROLKOWI, *t.* 7025; both the type and a bright lilac-purple flowered variety (var. *concolor*) of this very handsome Turkestan Iris are figured.

CALANTHE STRIATA, *t.* 7026; a native of Japan. The sepals and petals are cinnamon-brown with golden edges, internally, golden yellow on the outer surface.

AGAVE ELEMEETIANA, *t.* 7025; forming, with *A. attenuata*, a peculiar section of the genus, with broad, entire soft leaves. It is a native of Mexico and has been in cultivation for nearly a quarter of a century.

ÆSCULUS TURBINATA, *Revue Horticole*, November 1st, Figs. 120–124; M. André here figures and describes the fruit of this interesting Japanese plant from the specimen in the *Arboretum Segrezianum*, which is believed to have been the first plant in Europe to produce fruit. *Æ. turbinata*, as it appears at Segrez, is a small, low stemmed, round headed tree, of compact habit, with leaves not unlike those of the common Horse-Chestnut. They are paler, however, on the lower surface, upon which the veins are more prominent. The fruit is sub-spherical, flattened on the upper surface, slightly or not at all turbinate, barely more than an inch in diameter, and produced three or four together in short, stout-stemmed racemes. The Horse-Chestnuts of eastern Asia, of which three are described, are still very imperfectly known.

DIOSPYROS VIRGINIANA, *Gardeners' Chronicle*, November 3d; a portrait of the old and very fine specimen growing in the Royal Gardens at Kew, and believed to have been presented to George III. by Archibald, Duke of Argyle, "the tree-monger." In another illustration a piece of the bark of the Persimmon is represented in a most admirable and satisfactory manner.

Meetings of Societies.

Pennsylvania Forestry Association.

THE annual meeting of the Pennsylvania Forestry Association was held in Philadelphia on Tuesday evening, November 27th. The report of the Council of the Association was a full and interesting review of the work of the Association and of the efforts for the advancement of forestry throughout the country. Among the facts set forth were these: The membership has increased to 450. Twenty-five counties are represented. The new members have been interested and liberal. With a view to employing a competent agent to deliver lectures on Forestry throughout the state, it was decided to raise a fund of $5,000, and sixteen members have contributed $440. Some progress was reported in the movement to convert certain small open spaces of Philadelphia into city parks. Encouraging interest has been manifested in the Michaux course of lectures, delivered by Professor Rothrock on "Trees from Florida to Maine." It is proposed to publish these, with illustrations, in *Forest Leaves*, the journal of the Association. There was increased observance of the spring Arbor Day by the public schools in tree and vine planting; the autumn day was improved by in-door instruction.

The Treasurer reported $1,181.60 as the amount received during the year. An address to the American Forestry Congress at Atlanta was adopted, and it was resolved that the Council be empowered to send a representative to the Congress. A paper on "Forest-Planting in Virginia," by Mr. Burnet Landreth, proved to be a practical and valuable record of an experience of eighteen years in tree-planting on a 5,000-acre tract in tide-water Virginia. It was decided to publish the address and give it wide circulation.

Governor Beaver entered the hall just as the exercises were closing, and expressed profound interest in the condition and preservation of the forest area of the state, and spoke of his appointment of a Commission to attend the National Congress at Atlanta.

The officers chosen for the year were: President, Burnet Landreth; Vice-Presidents, John Birkenbine, Thomas J. Edge and Jeremiah S. Hess; Secretary, Mrs. J. P. Lundy; Treasurer, Charles E. Pancoast; Council at large, Mrs. Brinton Coxe, John P. Lundy, D.D., and Thomas H. Montgomery.

Notes.

During the past summer, a box of Carnations, sent from Providence, Rhode Island, to England, arrived at its destination with the flowers still fresh and fragrant.

At the Rookery, near Bromley, Kent, there is a Chinese Wistaria trained around the outer wall of a vinery and another wall running parallel to it and inclosing a piece of ground in the shape of a parallelogram. The longest branches which make this circuit have grown to a distance of 400 feet.

Tomatoes were introduced into Europe early in the seventeenth century, but for a long period were grown merely as ornamental plants. Despite the attractive appearance of the fruit, it was extremely repugnant to those who attempted to eat it, and the fact is perpetuated in the botanical name, Lycopersicum, which means "Wolf's Peach." Indeed, in Germany and some other parts of Europe, it is only within very recent years that the Tomato has won general recognition as a palatable and wholesome article of food.

Rosa rugosa, and the allied species, *Rosa Kamtschatica*, are being strongly recommended just now in England for the formation of hedges. They grow in that country with surprising rapidity and vigor, and develop so thickly close to the ground, that a single row of seedlings soon forms an impenetrable barrier, while the showy fruit and the beautiful flowers, which continue to appear after the fruit has reddened, and the glowing autumn colors of the foliage render such a hedge attractive to the eye for a large part of the year.

M. André, in a recent issue of the *Revue Horticole*, calls attention to the value of *Begonia semperflorens gigantea*, a hybrid between *B. lucida* and *B. semperflorens*, and its varieties, *rosea* and *Kermisina*, for the winter decoration of living rooms and conservatories. The foliage of these plants is thick and lustrous, and the pink or red flowers borne in large clusters continue to appear in the greatest profusion during the entire winter. Few plants can be cultivated more easily or are better suited for the purpose for which M. André commends them.

Professor Atwater has been placed in charge of the new Bureau of Correspondence with the Agricultural Experiment Stations at Washington. Bulletins will be issued, setting forth the results of experiments in this country, and these will be distributed among the stations. Specialists in this country and in Europe will be engaged to compile articles on subjects about which information is needed for general distribution. Another function of the Bureau will be to furnish Congress with information when legislation on agricultural matters is contemplated.

The death is announced of Mr. William H. Crawford, one of the most noted amateur horticulturists of Great Britain. A very rich man and a bachelor, he was, we are told, "personally of an ascetic temperament, but unsparing of expense when a good cause—charity, plants, books or pictures—was concerned." He may almost be called the creator of the Botanic Gardens attached to the University at Cork, and his beautiful place, Lakelands, near that city, is widely noted for its splendid collection of rare trees and shrubs from all temperate countries.

Wolffia microscopica, a species of Water Lentil native to the lakes of India, is the tiniest of all known flowering plants. It has neither stem, roots nor leaves, but consists of a fan-shaped body prolonged below into a root-like bladder, which serves to keep it in an erect position. From this bladder others develop, and so rapidly, that although a single plant is hardly perceptible to the naked eye, its offspring may in a few days cover a surface of several square yards in extent. In spite of its exiguous proportions and simple structure, the plant bears true flowers, although likewise of the simplest kind, each consisting of a single stamen or a single pistil.

The *Marysville* (California) *Appeal* has been collecting opinions from fruit-canners and shippers as to the desirability of irrigation for fruit. A wide diversity of judgment appears, but the general sentiment seems to be that fruit from trees not irrigated will keep better and endure long distance transportation more safely. Fruit from irrigated orchards is larger, fairer, better colored; but, being more juicy, it goes to pieces more readily. Some persons who prefer non-irrigated fruit for shipping, believe that in the same regions irrigated fruit is best for canning, drying and local use. Whenever it is possible by cultivation and thinning to conserve enough ground moisture to perfect a crop, irrigation is not generally advised. When it is practiced, great judgment should be exercised. When trees are watered copiously up to the time of the fruit harvest, it is said that quality and flavor may be sacrificed for size and color. Winter and spring irrigation is commended, and to have its best effect the land should be well fertilized.

The new law regulating the forests of Russia, with a view to their preservation, went into effect on the first of last January. The law applies to all Russia, including the Caucasus and Poland, but not to Finland, which has its own forest laws. The rights of property are not unnecessarily interfered with, but the new law provides for the control and management of the forests of individuals where the public welfare seems to demand it, and the cutting down of such forests is prohibited when it might endanger the best interests of the whole community. A commission is created in each province, with the Governor at its head, for the purpose of administering the law and protecting the rights of property-owners. As might have been expected in the case of a law of this character, its application has been beset by many difficulties growing out of the conflicts between agricultural and forest interests and the unwillingness of the people to submit to any control in the management of their property. The law, however, is considered successful, and its application may be expected to increase immensely the material prosperity of the Empire.

It is well known that a great majority of the insects most destructive to vegetation which now infest this country have been imported from foreign countries and naturalized here. The unusual destructiveness of these species is generally accounted for by the fact that their natural enemies are not imported with them, so that their reproductive powers have freer play here than they had where such natural checks occur. But in a recent number of *Insect Life*, Professor Riley adds, as an additional reason, that most of such species are introduced from Europe or the older civilizations where, on evolutional grounds, it is natural to suppose that they are the very species which have become accustomed to the civilized conditions induced during so many centuries. In other words, the species which most abound and have most successfully accommodated themselves to such artificial conditions, have, in the geologically brief period of man's pre-eminence, acquired advantages over species which have not been submitted to such environment. The former, when brought into competition with the latter, under such conditions, rapidly outnumber them and get the upper hand.

Every one has been writing about Chrysanthemums of late, but no one more interestingly than "Listener," of the Boston *Evening Transcript*. The yellow *Neesima*, for instance, one of the season's novelties from Japan, he says, "is the Chrysanthemum of Chrysanthemums—the loveliest of all the tribe, as well as the most characteristic, the most typical. . . . . Its fluffy gracefulness, its long, slender, slightly curved petals, each like the line of Fusiyama's curve, are intensely Japanese. One wonders whether the Japanese formed their art on the basis of this flower, or whether the flower was developed into its present form by contact with the Japanese genius." This praise is not too high nor is the admiration expressed for the variety in color and form shown in every large exhibition of Chrysanthemums. "The most striking feature of the exhibition, taking it as a whole, is, to the amateur without professional knowledge of the Chrysanthemum, the delicacy of the prevailing colors. . . . What a marvelous effect of color, . . . and what a preponderance of delicate shades, especially in light yellows and delicious pinks. . . . The strange and unusual tints . . . in almost all the exhibits it would be impossible to dwell upon, they are so infinite. There were many who stopped to admire the Elihu Vedder sort of pink of a Chrysanthemum called the Monsieur Freeman, . . . and over on the other side of the hall there was a tiny flower, growing in myriads on a big bush, that copied the homely tint of the Red Clover, that has blossomed for a week under the summer sun. . . . One may stand aghast, in a general sort of way, at the infinite varieties of the Chrysanthemum, but he cannot get a better idea of the scope of the flower, so to speak, than by comparing a certain big Peony-red flower of the species, which must be at least six inches across, and which has great, coarse, outward curving petals and a vacant, brown-red expanse in the centre, . . . with a little yellow flower on a big bush which bore the name of La Vogue—a bad name, because there was not the slightest trace of modishness about the little flower. The big red flower was all gloom and severity in its aspect; the little yellow flower carried with it an air of positive gaiety. . . . Probably there were 200 of these smiling little blossoms on the bush and every one was a distinct inspiration to merriment."